

VIII.—On a Collection of Blattidae from Northern Sarawak, chiefly Mt. Murud and Mt. Dulit. By R. HANITSCH, PH.D.

This collection of Blattidae from Northern Sarawak, chiefly from Mt. Murud and Mt. Dulit, made by Dr. E. Mjöberg between October 1922 and January 1923, includes many novelties, as was to be expected from a part of the country so little explored. Out of 55 species obtained, no fewer than 24 have proved new to science, and 7 species form new records for Borneo, viz., *Hemithyrsocera palliata* Fab., *Anaplecta malayensis* Shelford, *A. obscura* Shelford, *Phyllodromia contigua* Walker, *Epilampra circumdata* Hanitsch, *Catara minor* Krauss, and *Panesthia sinuata* Saussure. Also one new genus, *Ctenoneura* (subfam. Corydinae) has had to be established. The collection is also remarkable for the almost entire absence of cosmopolitan forms. Though the ubiquitous *Phyllodromia germanica* L. is represented by three specimens from Mt. Dulit, it was almost a matter of relief that *Blatta orientalis* L., *Stylopyga rhombifolia* Stoll, *Periplaneta americana* L., *P. australasiae* Fab., *Leucophaea surinamensis* L., *Nauphoeta cinerea* Olivier, etc., were not met with, the explanation, no doubt, being that the white man with these hangers-on to civilization had not yet penetrated into these regions. Of the species described here for the first time, the largest and most beautiful form is *Morphna mjobergi*, of which no fewer than 13 specimens were taken on Mt. Dulit. It is a remarkable fact that an insect so striking and apparently common in that locality, should have escaped notice so long, due either to its very restricted occurrence, or to the country having been so little explored yet.

In my two papers on "Malayan Blattidae"* I gave particulars as to the number and distribution of the described

*Part I, Journal, Straits Branch, R. Asiatic Society, No. 69, pp. 17-178, 7 plates (1915); Part II, Journal, Malayan Branch, R. Asiatic Society, Vol. I, pp. 393-474, 2 plates (1923).

species within the Malayan sub-region—Malay Peninsula, Sumatra, Java and Borneo. The present collection brings the number of Bornean species to 146, that of the sub-region to 258.

The Blattidae are generally classified into 11 sub-families, two of which, the Nyctiborinae and Blaberinae, are restricted to the New World. Of the nine remaining sub-families all are represented in the present collection, with the exception of the Panchlorinae, the Malayan members of which are mainly the above-mentioned cosmopolitan species of *Leucophaea* and *Nauphoeta*.

Figs. 6, 7, 15 and 17 were drawn for me by Mr. V. Knight, to whom I herewith offer my best thanks; the others by myself.

The types here described are, with permission of the Sarawak Museum, preserved in the Hope Department, University Museum, Oxford, where I have worked out the collection, and I take this opportunity of expressing my sincerest thanks to Professor Poulton, F.R.S., for kindly allowing me to continue my study of this group in his Department.

LIST OF THE BLATTIDAE OBTAINED.

SUBFAM. 1. ECTOBINAE.

- Theganopteryx apicigera* Walker.
Hemithyrsocera palliata Fab.
Anaplecta borneensis Shelford.
 „ *malayensis* Shelford.
 „ *obscura* Shelford.
 „ *cornea* n. sp.
 „ *maculifera* n. sp.
 „ *transversa* n. sp.

SUBFAM. 2. PHYLLODROMIINAE.

- Ischnoptera falcifera* n. sp.
Phyllodromia contigua Walker.
 „ *germanica* L.
 „ *hamifera* Walker.
 „ *hewitti* Shelford.
 „ *irregulariter-vittata* Brunner.
 „ *longe-alata* Brunner.
 „ *obtusifrons* Walker.

- Phyllodromia confluens* n. sp.
 ,, *crucifera* n. sp.
 ,, *cunei-vittata* n. sp.
 ,, *interrupta* n. sp.
 ,, *luteo-maculata* n. sp.
 ,, *nigro-vittata* n. sp.

Duryodana palpalis Walker.

Pseudophyllodromia laticeps Walker.

,, *pulcherrima* Shelford.

Allacta microptera n. sp.

SUBFAM. 3. NYCTIBORINAE.

None (New World forms).

SUBFAM. 4. EPILAMPRINAE.

Morphna mjöbergi n. sp.

Pseudophoraspis testudinaria n. sp.

Rhabdoblatta procera Brunner.

Epilampra circumdata Hanitsch.

,, *lurida* Burmeister.

,, *plena* Walker.

,, *intermedia* n. sp.

,, *unicolor* n. sp.

Rhcnoda rugosa Brunner.

SUBFAM. 5. BLATTINAE.

Methana pallipalpis Serville.

Dorylaea atro-caput n. sp.

Blatta concinna De Haan.

Periplaneta lata Herbst.

,, *nivei-palpis* n. sp.

,, *succinea* n. sp.

Catara rugosicollis Brunner.

,, *minor* Krauss.

Protagonista fusca n. sp.

SUBFAM. 6. PANCHLORINAE.

None.

SUBFAM. 7. BLABERINAE.

None (New World forms).

SUBFAM. 8. CORYDINAE.

- Homopteroidea shelfordi* n. sp.
Ctenoneura fulva n. g. and sp.
 „ *major* n. g. and sp.
Dyscologomia cesticulata Saussure.

SUBFAM. 9. OXYHALOINAE.

- Diploptera bicolor* n. sp.
 „ *maculata* n. sp.

SUBFAM. 10. PERISPHAERINAE.

- Paranauphoeta lyrata* Burmeister.
Pseudoglomeris flavicornis Burmeister.

SUBFAM. 11. PANESTHINAE.

- Salganea morio* Burmeister.
Panesthia javanica Serville.
 „ *sinuata* Saussure.

SUBFAM. 1. ECTOBINAE.

THEGANOPTERYX APICIGERA Walker.

1 ♀ Mt. Dulit; 1 ♀ Pah Trap.

The two examples obtained show well the variation in colour of this species. The one, from Mt. Dulit, has the pronotum shining black and the tegmina reddish brown, with black tips. The other, from Pah Trap, has the pronotum yellowish testaceous and the tegmina of the same colour, with black tips.

HEMTHYRSOCERA PALLIATA Fab.

1 ♀ Mt. Dulit.

This widely distributed species, known from Ceylon, India, China, Indo-China, Lower Siam, the Malay Peninsula and Sumatra, is now for the first time recorded from Borneo.

ANAPLECTA BORNEENSIS Shelford.

2 ♀ Mt. Dulit.

First described from Kuching, Sarawak, the type being in the Oxford Museum.

ANAPLECTA MALAYENSIS Shelford.

1 ♀ Mt. Murud, 6500 feet.

Total length 7 mm. Shelford described this species from examples from the Malay Peninsula in the Paris Museum, one of which is now in the Oxford Museum. Mr. V. Knight took a specimen at Kota Tinggi, Johore, August 1917. This is now the first record for Borneo.

ANAPLECTA OBSCURA Shelford.

1 specimen (sex ?), Kalabit country, 3000 feet.

Total length 4 mm. This is only the second example of this species known, the type, from the Malay Peninsula, collected by E. de la Croix and P. Chape, 1899, being in the Paris Musuem. Though the specimen from Kalabit is broken, yet tegmina and wings are in perfect condition, and the wings show very distinctly the great reduction in venation, as described and figured by Shelford.

ANAPLECTA CORNEA n. sp.

♂. Head orange; antennae fuscous, at least as long as the body. Pronotum oval, disk amber-coloured, sides hyaline. Tegmina amber, 7 costals, ulnar vein bifurcate, its two branches parallel to each other. Wings dark fuscous, 6 costals, all, except the last one, joined at their bases by transverse venules; medio-discal field crossed by 6 transverse venules; two transverse venules distally connecting the median with

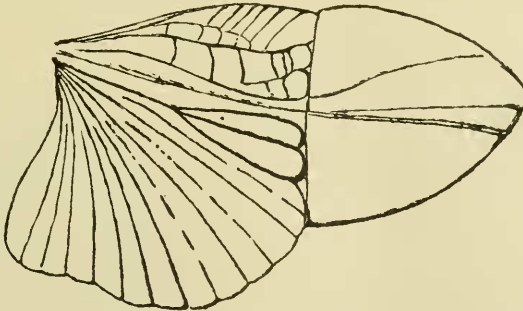


Fig. 1. *Anaplecta cornea* n. sp. Mt. Dulit. Right wing $\times 6\frac{2}{3}$.

the ulnar vein; first axillary tri-ramose; apical area two-fifths of total wing length. Abdomen below yellowish fuscous, supra-anal lamina entire, ciliated; subgenital lamina large,

rounded, entire, not ciliated; cerci orange; styles distinct. Legs orange.

♂. Total length 9 mm.

Hab. 1 ♂ Mt. Murud, 6500 feet; 2 ♂ Mt. Dulit.

Allied to *A. fulva* Brunner, from the Kareen Mts., from Bhamo, Upper Burma, and Tenasserim (Ann. Mus. Civ. Genova, (2), xiii, p. 12, (1893)), which differs from *A. cornea* chiefly by its smaller size, viz., ♂ 6.2 mm.; in total length, and by its subgenital lamina being bilobed.

ANAPLECTA MACULIFERA n. sp.

♂ and ♀. Head rufous-castaneous; antennae fuscous, as long as the body. Pronotum circular, castaneous, a large testaceous macula behind the centre, lateral margins hyaline. Tegmina castaneous, anterior margin yellowish, mediastinal area hyaline, 9 costals. Wings dark fuscous, 7 costals, all except the last one, joined at their bases by transverse venules; medio-discal field crossed by 6 transverse venules; two transverse venules distally connecting the median with the ulnar vein; first axillary tri-ramose; apical area two-fifths of total wing-length. Abdomen below dark testaceous, legs and cerci light testaceous.

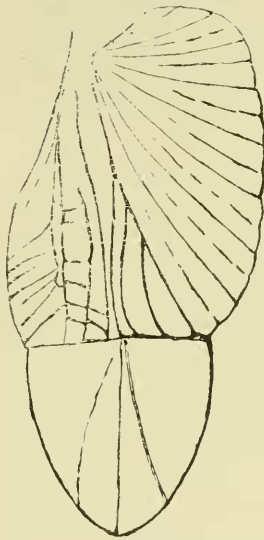


Fig. 2. *Anaplecta maculifera* n. sp. Mt. Murud, 6500 feet. Left wing $\times 6\frac{3}{4}$.

Posterior border of sub-genital lamina ciliated.

♂ and ♀. Total length 7.5 mm.; tegmina 6 mm.

Hab. Numerous ♂ and ♀ specimens, Mt. Murud, 6500 feet.

Closely resembles *A. maculata* Shelford, from Ceylon (Trans. Ent. Soc., 1906, p. 240, pl. xv, fig. 7) by its castaneous colour, the markings of the pronotum, and by the venation, in general, both of tegmina and wings, but differs from it by the number of the costals of the tegmina, viz., 9 instead of 7, and of the wings, viz., 7 instead of 5. The two species are also closely allied to *A. cornea* and *A. fulva*.

ANAPLECTA TRANSVERSA n. sp.

♀. Head reddish-testaceous, shining; antennae fuscous, at least as long as the body. Pronotum circular, anterior half of disk fuscous, posterior half testaceous, lateral margins hyaline. Tegmina reaching to the end of the abdomen, fusco-testaceous, with the anterior margin amber-coloured and semi-transparent, an ill-defined transverse vitta at one-third of their total length, of the same colour; 8 costals. Wings fuscous, with 6 costals, of which only the first three are connected at their bases by transverse venules; medio-discal field crossed by 7 transverse venules; two transverse venules distally connecting the median with the ulnar vein; first axillary tri-ramose; apical area two-fifths of the total wing length. Abdomen below, legs and cerci, pale testaceous.

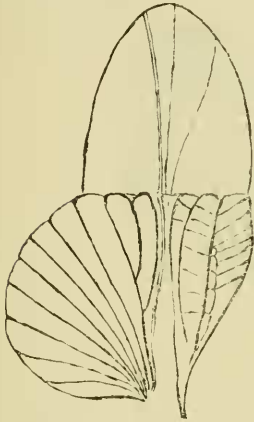


Fig. 3. *Anaplecta transversa* n. sp. Mt. Dulit. Left wing $\times 6\frac{2}{3}$.

♀. Total length 7 mm.; tegmina 5.5 mm.

Hab. 2 ♀ Mt. Dulit.

SUBFAM. 2. PHYLLODROMIINAE.

ISCHNOPTERA FALCIFERA* n. sp.

♂. Head not covered by the pronotum; vertex dark castaneous, with a few faint longitudinal lines; front testaceous, a dark spot in its centre. Antennae fuscous, exceeding the tegmina. Pronotum trapezoidal, posteriorly slightly produced; disk testaceous, with two pairs of black hook-like markings, the smaller pair anterior, the larger pair posterior, all encircled by a black irregular ring of varying width, slightly open in front; margin testaceous, broad in front and at the sides, narrow behind. Tegmina much exceeding the body, testaceous,

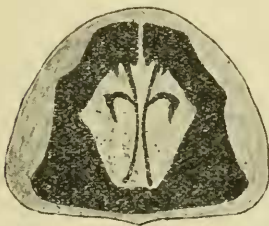


Fig. 4. *Ischnoptera falcifera* n. sp. ♂, Mt. Dulit. Pronotum $\times 8$.

*From the hook-like markings on the pronotum.

23 costals, 8 discoidal sectors. Wings fuscous; mediastinal vein with 5 branches; mediastinal area opaque; radial vein bifurcate, outer half, with 11 costals, inner half near its end breaking up into 6 small branches terminating in the apex

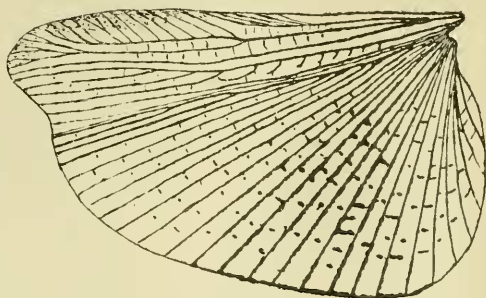


Fig. 5. *Ischnoptera falcifera* n. sp. ♂, Mt. Dulit. Left wing $\times 5$.

of the wings; radial area opaque, proximally dark brown, distally light brown; median vein simple; ulnar vein with 3 large branches terminating just below the apex of the wing, and with about 7 small venules towards the dividing vein; apical triangle small.

♂. Total length 21 mm.; body 15 mm.; pronotum 4×5 mm.; tegmina 16.5 mm.

Hab. 2 ♂ Mt. Dulit; 1 ♂ Kalabit country, 3000 feet. Mr. V. Knight took a ♀ example at Kota Tinggi, Johore, August 1917.

PHYLLODROMIA CONTIGUA Walker.

Blatta contigua Walker, Cat. Blatt. B.M., p. 228, (1868).

1 ♀ Mt. Dulit.

Hitherto known from New Guinea only, the type (♀) being in the Oxford Museum. This species which is of a very pale testaceous colour, is readily recognized by two parallel bands across the head ("caput fuscente bifasciatum"), viz., a pale brown band between the upper margins of the eyes, and a more distinct black one between the lower margins. Shelford (Gen. Ins. fasc. 73, p. 14) regarded this species as synonymous with *P. propinqua* Walker, from Celebes. However, as the latter, the type (♀)* of which is also in Oxford, does not show the bands across the head, it will be safer to keep the two species separate.

*Not ♂, as stated by Walker (Cat. Blatt. B.M. p. 228).

PHYLLODROMIA GERMANICA L.

3 ♂ Mt. Dulit.

PHYLLODROMIA HAMIFERA Walker.

1 ♂ Mt. Murud, top.

PHYLLODROMIA HEWITTI Shelford.

2 ♂, 1 ♀ Mt. Murud.

1 ♀, Kalabit Country, 3000 feet.

The three specimens obtained show slight differences from the type (♂), from Kuching, Sarawak (7th February, 1899), in the Oxford Museum. In the type the head is of a uniform light mahogany colour, the tegmina have 21 costals, and in the wings there are 5 branches to the mediastinal vein, 12 costals, and a 3-ramose ulnar vein. In the specimens from Mt. Murud the head shows lighter and darker blotches, and in one of the ♂ specimens which was examined more in detail, the tegmina have 24 costals, the wings have the mediastinal vein 4-ramose, there are 15 costals, and the ulnar vein is bifurcate. However, these differences seem too slight to justify specific separation. The underside of the abdomen of the type, as well as of the present specimens, is testaceous, with a pair of large black blotches to each segment; the legs are also testaceous, with one or two black blotches on the coxae.

There is also in the Cambridge Museum a specimen (♀), presented by Shelford in 1903, with the locality "Borneo."

PHYLLODROMIA IRREGULARITER-VITTATA Brunner.

1 ♂, 1 ♀ Mt. Murud, 6500 feet.

Originally described from Borneo and Java. Represented in the Museums at Oxford and Cambridge by one specimen each from Borneo.

PHYLLODROMIA LONGE-ALATA Brunner.

1 ♂ Mt. Dulit.

There is in the Oxford Museum a series of 20 specimens of a Blattid from Kuching, Sarawak (March 1900), which Shelford identifies with this species. A single ♂ from Mt. Dulit fully agrees with that series though less satisfactorily with Brunner's description of his type (♀) also from Sarawak. The Mt. Dulit example may be described as follows:—

♂. Head not quite covered by the pronotum, shining chestnut to black; a narrow, deep orange band between the insertion of the antennae; antennae exceeding the tegmina, fuscous, setiform. Pronotum oval, posterior margin almost straight; disk shining black, with broad, white lateral margins. Tegmina much exceeding the body, pale chestnut, also with a white margin extending not quite to the apex; 13 costals, 5 discoidal sectors. Wings pale fuscous, anterior margin darker, 9 costals, median vein undivided, ulnar 3-ramose, triangular apical area distinct. Thorax and abdomen below shining black; cerci long, fuscous to black, 10 joints. Legs with the coxae shining black, femora chestnut, tibiae light brown, tarsi testaceous. Front femora sparsely spined, spines approximately all of the same size.

♂. Total length 13 mm.; body 9 mm.; pronotum 3 × 4 mm.; tegmina 10 mm.

This species has a superficial resemblance to *Pseudophyllo-dromia laticeps* Walker. The latter, however, may readily be distinguished by its broad, orange-coloured head.

PHYLLODROMIA OBTUSIFRONS Walker.

1 ♂ Mt. Murud.

The Oxford Museum contains, besides the type, from Sarawak, collected by Wallace, also three specimens from Kuching, presented by Shelford in 1900. Not known from outside Borneo.

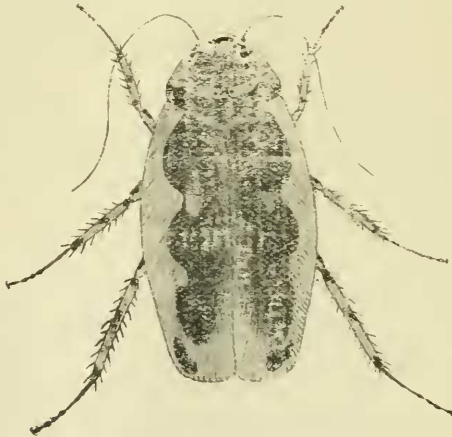


Fig. 6. *Phyllodromia confluens* n. sp. × 4 ♀, Mt. Murud, 6000 feet.

PHYLLODROMIA CONFLUENS n. sp.

♀. Broad, short. Head almost covered by the pronotum; testaceous, vertex with 3 longitudinal broad brown lines, the median of which is continued down the frons to the base of the labrum; antennae (multilated) proximally testaceous, distally fuscous. Pronotum parabolic, posterior border rounded; testaceous, centrally with two large castaneous blotches, one on either side of the middle line, and a broad castaneous border along the posterior edge, this border being connected by a median, narrow, castaneous line with the blotches in front. Tegmina short, broad, barely exceeding the tip of the cerci; hyaline-testaceous, each with a large irregular castaneous blotch spreading over most of the posterior two-thirds of the wing, leaving free the mediastinal area and an irregular space in the ulnar area, opposite the middle of the dividing vein; an irregular fuscous blotch near the apex. Wings short and broad, infumated: 9 costals, their ends incrassated; median vein simple; apical triangle small, but distinct; ulnar vein 5-ramose; 1st axillary 4-ramose. Abdomen below testaceous, broadly and irregularly bordered with dark castaneous. Supra-anal lamina much broader than long, triangular, a median keel ending in the apical angle. Subgenital lamina broad, triangular, a similar keel ending in the apex. Cerci testaceous, with large castaneous blotches. Legs (first pair missing) testaceous, with dark blotches, viz., one on the distal end of the femora, and three along the anterior edge of the tibiae.

♀. Total length 11 mm.; body 9 mm.; pronotum 3 × 4 mm.; tegmina 8 mm.

Hab. 1 ♀ Mt. Murud, 6000 feet.

PHYLLODROMIA CRUCIFERA* n. sp.

♂. Vertex of head indistinctly mottled brown and testaceous; front testaceous; antennae fuscous, exceeding the tegmina. Pronotum elliptical, disk with brown and testaceous vermiculation, recalling *P. notulata* Stal., *P. polygrapha* Wlk., *P. obtusifrons* Wlk., *P. nimbata* Shelf., etc.; lateral margins hyaline. Tegmina broad, greatly exceeding the body, semi-hyaline testaceous, the transverse venules, especially towards the apex, strongly marked, cruciform or lozenge-shaped; mediastinal area broad, 11 costals, the 10th bifurcate, the

*From the cruciform venules of the tegmina.

11th multi-ramose; 5 discoidal sectors. Wings slightly infumated, mediastinal vein bifurcate; 9 costals, 1st to 5th simple, 6th bifurcate, 7th to 9th tri-ramose, all ends incrassated; ulnar vein 4-ramose; transverse venules strongly marked, but not thickened in the centre; apical area large, triangular. Front femora in their proximal $\frac{3}{4}$ th with numerous large spines, distal $\frac{1}{4}$ th with a series of closely set small spines. Legs testaceous, with black spots at the base of the tibial spines. Cerci long, unicolorous, testaceous, 10 joints. Styles symmetrical. Supra-anal lamina with a shallow, cre-scent-like indentation, black. Subgenital lamina testaceous, mottled with black; posterior border straight. Abdomen below testaceous, lateral margins black.

♂. Total length 20 mm.; body 12.5 mm.; pronotum 3.2×4.8 mm.; tegmina 17 mm.

The ♀ differs from the ♂ merely by the transverse venules of the tegmina and wings being less strongly marked.

Hab. 2 ♂ Mt. Murud, 6500 feet; 1 ♀ Mt. Dulit.

This species comes under *Chorisoblatta* Shelford; and is possibly allied to *Phyllodromia nodosa* Fritze which is described as "dimidia parte apicali in venis punctis nodosis fuscis, saltem in elytro sinistro conspersa."

PHYLLODROMIA CUNEI-VITTATA* n. sp.

♀. Head free, dark castaneous, shining, vertex slightly lighter; antennae at least as long as the body, black. Pronotum parabolic, posteriorly somewhat produced; disk black, with an ill-defined median longitudinal reddish-testaceous streak; lateral margins broad, testaceous. Tegmina exceeding the abdomen and reaching to the tip of the cerci, uniformly amber-coloured, semi-transparent; radial vein bifurcate, 15 costals; anterior ulnar 4-ramose, the branches running parallel and equidistant; 5 discoidal sectors. Wings slightly fuscous, radial vein bifurcate, 12 costals, their ends incrassated median vein bifurcate, ulnar simple; apical area small, but distinct. Abdomen below and cerci dark castaneous. Legs dark testaceous, with dark spots at the bases of the spines. Front femora proximally with 3 large spines, distally with a close series of small spines. Supra-anal lamina triangular; subgenital lamina ample, semi-globular.

*From the wedge-like black markings on the pronotum.

♀. Total length 13 mm.; body 10 mm.; pronotum 3×4 mm.; tegmina 10 mm.

Hab. 2 ♀ Mt. Dulit. One of the specimens with egg-case, with the suture carried to the left.

Allied to *P. irregulariter-vittata* Brunner.

The Oxford Museum contains an unnamed ♀ of the same species, from the Larut Hills, Perak, 4000--4500 feet, taken by R. Shelford, February, 1905. There is also a ♂ of the same date and locality, which Shelford apparently took to belong to the same species. It agrees with the ♀ in the markings of the pronotum and the venation of the tegmina, but differs by the colouring of the head which is orange-testaceous and bears a dark macula on the frons, by the abdomen being testaceous, and by the median vein of the wings being simple and the ulnar bifurcate.

PHYLLODROMIA INTERRUPTA n. sp.

♀. Short, broad. Head entirely covered by the pronotum; vertex testaceous; front testaceous, with a large horseshoe-shaped black blotch reaching from eye to eye; labrum testaceous; antennae at least as long as the body, fuscous. Pronotum parabolic, posterior border rounded, centre of disk testaceous, with a broad, shining black border which is continued along the hinder edge of the pronotum; sides hyaline, testaceous. Tegmina reaching only to the apex of the cerci, testaceous, with two large, shining black blotches, the nearer one occupying rather more than the distal half of the anal area and spreading through the radial area as far as the mediastinal vein; the further blotch occupying the distal two-fifths of the tegmina, leaving free the anterior margin which is light testaceous to hyaline; mediastinal area hyaline; 13 costals. Wings short and broad, almost colourless, 9 costals, median vein simple, ulnar 4-ramose, apical triangle distinct, 1st axillary 4-ramose. Abdomen below testaceous, the first 4 segments with the outer portion of the anterior margins black. Supra-anal lamina narrow, rounded. Subgenital lamina pentagonal much broader than long, median line raised into a ridge, distal angle sharp. Cerci dark testaceous below, lighter above. Legs uniformly testaceous; anterior femora with a few long spines, followed by a series of closely placed minute spines.

♀. Total length 12 mm.; body 9 mm.; pronotum 3×4 mm.; tegmina 9 mm.

Hab. 1 ♀ Kalabit country, 3000 feet.

Both this species and *P. confluens* n. sp. appear closely allied to *P. hamifera* Walker.

PHYLLODROMIA LUTEO-MACULATA* n. sp.

♂. Head testaceous, a dark band between the eyes; antennae black, reaching nearly to the tip of the tegmina. Pronotum oval, disk black, enclosing posteriorly an oblong testaceous macula, and anteriorly 3 or 4 small testaceous dots arranged on either side of a median narrow light line; lateral margins hyaline. Tegmina with their anterior third, or more hyaline; posterior two-thirds fusco-testaceous; two or three hyaline spaces in the basal third. Wings strongly infuscated, with a well-marked oval orange patch along the anterior margin; 10 costals; ulnar vein 4-ramose, the transverse venules strongly marked; apical triangle large, hyaline. Abdomen below, legs, cerci and styles testaceous. Front femora with large spines proximally a close-set series of small spines distally.

♂. Total length 14 mm.; body 10.5 mm.; pronotum 2.1 × 3 mm.; tegmina 12 mm.

Hab. 1 ♂ Mt. Murud, 6500 feet.

PHYLLODROMIA NIGRO-VITTATA n. sp.

♂ ♀. Head testaceous, with a black band between the eyes; antennae dark fuscous, reaching to the apex of the tegmina. Pronotum elliptical; disk testaceous, with black and brown vermiculations symmetrically arranged on either side of a central longitudinal light line; lateral margins hyaline. Tegmina much exceeding the abdomen, anterior half clear testaceous, posterior half with fuscous blotches, and a distinct black streak along the anal vein; 14 costals; and area with 5 longitudinal discoidal sectors; wings fuscous, mediastinal vein with 2 branches; 10 costals, the first 6 with their apices clavately incrassated; ulnar vein with 4 branches; apical triangle well developed. Abdomen below dark testaceous, with fuscous margins; cerci dark testaceous. Legs testaceous; front femora proximally with a few large spines, distally with a close-set row of minute spines (Shelford's type B.)†

*From the orange-yellow patch on the wings.

†Entom. Mo. Mag. (2), Vol. xxii, pp. 154-156 (1911).

♂ ♀. Total length 15.5 mm.; body 9.5 mm.; pronotum 2.8 × 3.2 mm.; tegmina 13.5 mm.

Hab. 2 ♂, 1 ♀ Mt. Murud, 6500 feet. Also occurs in Singapore (the Hon. C. J. Saunders, 1922), and on Bukit Kutu, Malay Peninsula, 3457 feet (myself, April 1915).

Closely allied to *P. nimbata* Shelford, from Kuching, Sarawak, the type of which is in the Oxford Museum, but differing from it by its larger size, the much longer tegmina, and the black streak along the anal vein of the tegmina which is very characteristic. Both *P. nigro-vittata* and *P. nimbata* come under *Chorisoblatta* Shelford, the type of which is *B. liturifera* Stal (characterized by the oblique discoidal sectors of the tegmina, the ramose ulnar vein of the wings, the large apical triangle, and the front femora being armed after type B.).

DURYODANA PALPALIS Walker.

1 ♂ Mt. Dulit.

The Oxford Museum has, besides the type, from Sarawak, collected by Wallace, a series of 16 specimens from Kuching, 1899 and 1900, presented by Shelford. Not known from outside Borneo.

PSEUDOPHYLLODROMIA PULCHERRIMA Shelford.

1 ♂ Tutau River; 1 ♂, 1 ♀ Mt. Dulit.

PSEUDOPHYLLODROMIA LATICEPS Walker.

1 ♀ Miri.

ALLACTA MICROPTERA n. sp.

♂. Head dark testaceous, shining; antennae testaceous. Pronotum large, parabolic, almost entirely covering the head, amber-coloured, shining. Tegmina short, lanceolate, covering the first four abdominal segments only; amber-coloured, anal area sub-fuscous; 8 costals, ulnar vein 3-ramose. Wings greatly reduced, much smaller than the tegmina, venation obliterated. Abdomen above castaneous, shining, end segment laterally with a white macula; below orange, with a broad sub-marginal fuscous border. Supra-anal lamina rounded. Cerci 8-jointed, white, except the 4th and 5th joints which are black. Styles minute. Legs testaceous, posterior femora moderately spined; arolia present.

♂. Total length 6 mm. ; tegmina 3 mm. ; wings 1.5 mm.

Hab. 1 ♂ Mt. Murud, top.

The other Malayan species of this genus are *A. parva* Shelford, from Kuching, Sarawak, the type of which is in the Oxford Museum, and *A. similis* Saussure (= *A. obtusata* Kirby), from the Cocos Keeling Islands. The two differ from the present species by the full development of their wings.

SUBFAM. 4. EPILAMPRINAE.

MORPHNA MÖBERGI n. sp.

♂. Head not quite covered by the pronotum, fusco-testaceous, with 3 longitudinal black lines on the vertex and a black blotch in front. Antennae as long as the body, proximally ferrugineous, distally black. Pronotum large, oval posterior margin obtusely angled, deeply punctured, testaceous, with a large central black blotch, reaching to the anterior margin of the pronotum and occupying a fourth of it, posteriorly spreading out along the whole hinder margin of it; the two

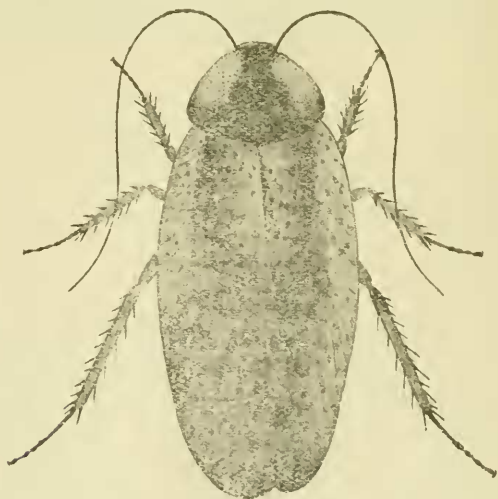


Fig. 7. *Morphna mjobergi* n. sp. $\times 1$, ♂, Mt. Dulit.

lateral testaceous areas with numerous large and deep black punctures and a few small brown dots. Tegmina much exceeding the body, deeply punctured, the mediastinal area light

testaceous with brown blotches; remainder of tegmina dark testaceous with numerous irregular black blotches and a black humeral stripe. Abdomen ventrally testaceous, on either side of each segment a large round black mark and scattered brown spots. Legs, cerci and styles testaceous, unicolorous.

♀. Slightly larger than the ♂, but of the same colouring and markings, only the abdomen ventrally darker.

Total length ♂ 51 mm., ♀ 53 mm.; body ♂ 37 mm., ♀ 40 mm.; pronotum ♂ 10 × 15 mm., ♀ 12 × 17 mm.; tegmina ♂ 42 mm., ♀ 43 mm.

Hab. 4 ♂, 9 ♀ Mt. Dulit.

This beautiful insect which I have much pleasure in naming after Dr. Mjöberg, is closely allied to *M. maculata* Brunner, but is readily distinguished by the markings of the pronotum. In *M. maculata* the central black blotch of the pronotum is much smaller, it is widely separated from the anterior margin, and reaches the posterior margin by only about six processes. The restricted occurrence of *M. mjobergi*, viz., so far known from Mt. Dulit only, is very remarkable, as compared with that of *M. maculata*, which has been taken at Singapore (by Wallace about 70 years ago, and by the Hon. C. J. Saunders at the Impounding Reservoir, Thomson Road, September, 1922), at Penang (H. N. Ridley, 1900), by myself at three places on the Malay Peninsula (Semangko Pass, Bukit Kutu and Gunung Kledang), and in Sarawak (Wallace and Shelford). Brunner gave the origin of his type as "Java"?

PSEUDOPHORASPIS TESTUDINARIA n. sp.

♀. Broad, convex. Head entirely covered by the pronotum, light testaceous, a large black blotch starting from between the eyes and continued downwards, giving off a branch on either side just below the insertion of the antennae and ending at the base of the labrum. Antennae (broken) nearly as long as the body. Pronotum parabolic, much broader than long, posteriorly only slightly produced, smooth, not impresso-impunctate; testaceous, heavily mottled with dark brown and black, with two large black maculae, one on either side of the middle line, nearer to the anterior margin; along the posterior margin a number of testaceous lacrymiform maculae, broadly bordered with black. Tegmina only slightly exceeding the abdomen, broad, rounded at the apex, testaceous,

heavily mottled with brown, with a series of large black blotches along the proximal third of the radial vein; anal area impresso-punctate, remainder of tegmina only slightly so. Abdominal sternites very dark, the testaceous ground colour almost entirely obliterated by brown and black. Posterior femora sparsely spined, posterior metatarsus biserially spined, its pulvillus small; remaining joints unarmed. Arolium large. Cerci 12-jointed.

♀. Total length 39 mm.; body 36 mm.; pronotum 10×15 mm.; tegmina 31 mm.

Hab. 1 ♀. Sarawak (no detailed locality).

This species has quite the appearance of an *Epilampra* and differs from that genus merely by its head being covered by the pronotum, and by the sparse spination of its posterior femora, two characters which would not seem of great importance.

RHABDOBLATTA PROCERA Burmeister.

1 ♀ Mt. Murud, 6500 feet; 1 ♂, 1 ♀ Lio Matu.
2 ♂, 2 ♀ Kalabit country, 3000 feet.

EPILAMPRA CIRCUMDATA Hanitsch.

1 ♀ Sarawak (no detailed locality).

I first described this species from Singapore and several places on the Malay Peninsula. This is now the first record from Borneo.

EPILAMPRA LURIDA Burmeister.

1 ♀ Tutau River.
1 ♀ Kalabit country, 3000 feet.

EPILAMPRA PLENA Walker.

3 ♂, 2 ♀ Mt. Murud, 6500 feet.

The three male specimens vary from 21 to 25 mm. in total length, the two females measure 22 mm. and are darker in colour than the males.

EPILAMPRA INTERMEDIA n. sp.

♀. Head slightly exposed, dark testaceous, with 3 longitudinal black lines on the vertex, a large castaneous blotch between the lower part of the eyes, and a second one between it and the labrum. Antennae as long as the body, light castaneous, unicolorous. Pronotum parabolic, posterior margin angled; smooth, not impresso-punctate, testaceous, with a dense mass of large and small black dots and a series of about 12 large spots along the posterior margin. Tegmina much exceeding the abdomen, minutely impresso-punctate, testaceous to light castaneous, with numerous round light spots against the proximal border of which slightly smaller brown spots are placed which are darkest in the basal portion of the tegmina and fade away apically. Both the light and the brown spots are specially large along the radial vein. Wings amber coloured, darkest along the anterior border. Abdomen testaceous to orange, with dark spots, darkest posteriorly, the sub-genital (♀) lamina almost entirely black. Legs dark testaceous, outer edge of tibiae black, tibial spines dark testaceous, metatarsus and tarsus of the same colour, but each joint black terminally.

♀. Total length 30 mm.; body 23 mm.; pronotum 6.5 × 8 mm.; tegmina 25 mm.

Hab. 1 ♀ Mt. Dulit. There is in the Oxford Museum an unnamed ♀ specimen from Kuching, Sarawak (R. Shelford, July, 1900), which agrees with the one from Mt. Dulit in all particulars, and another ♀, from Mt. Matang, Sarawak (January, 1897), which differs only by the brown blotches on the face being less distinct.

This species is of the typical habitus of an *Epilampra* and offers the usual difficulty of describing its colour and markings satisfactorily. It seems nearest allied to my *E. circumdata*, in which, however, the disk of the pronotum is of a uniform chestnut, with testaceous border.

EPILAMPRA UNICOLOR n. sp.

♀. Head almost covered by the pronotum, black shining; labrum testaceous; antennae (mutilated) brown. Pronotum parabolic, posteriorly angled, smooth, shining, castaneous. Tegmina just exceeding the body, their apex rounded, shining, uniform castaneous, anal area faintly impresso-punctate.

Wings amber-coloured. Abdomen below castaneous, legs castaneous (right hind leg entirely missing, the left mutilated). Metatarsus of the middle leg longer than the remaining joints, spined throughout the greater part of its length, pulvillus apical, first tarsal joint with few spines, arolia present.

♀. Total length 25 mm.; body 24 mm.; pronotum 7 × 8 mm.; tegmina 18 mm.

Hab. 1 ♀ Mt. Dulit.

The systematic position of this species is somewhat doubtful, as the hind legs of the single specimen obtained are mutilated. Its uniform colouring is quite unlike a typical *Epilampra*. At the first glance it might be taken for a small species of *Morphna*, yet the spined character of the metatarsus of its mid legs shows that it cannot belong to that genus.

REICNODA RUGOSA Brunner.

1 ♂, 2 ♀ Mt. Dulit.

SUBFAM. 5. BLATTINAE.

METHANA PALLIPALPIS Serville.

1 ♂ Mt. Dulit; 2 ♀ Mt. Murud, 6500 feet.

One of the ♀ specimens from Mt. Murud is very much darker than the others. However, this would hardly justify specific separation.

As I have pointed out in a former paper (J., Malayan Branch, R. As. Soc., Vol. I, p. 435 (1923)) the proper place of this species should be under *Dorylaea*.

DORYLAEA ATRO-CAPUT n. sp.

♀. Head free, shining black; mouth parts black; antennae at least as long as the body, black. Pronotum parabolic, posterior border rounded, dark castaneous to black, shining. Tegmina only barely exceeding the body, broad, dark castaneous to black, shining. Wings light castaneous. Abdomen below dark castaneous, shining. Supra-anal lamina sub-quadrate,

its sides bulging out, its apex with a triangular cleft cerci twice as long as the supra-anal lamina, black, with 14 joints, hirsute. Femora castaneous, remaining joints of legs almost

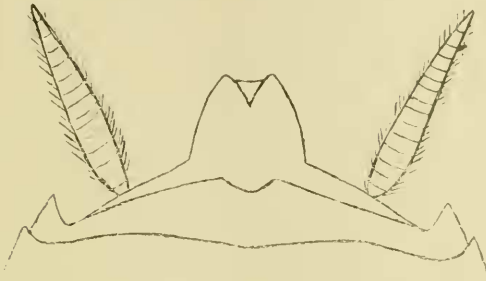


Fig. 8. *Dorylaea atro-caput* n. sp. ♀, Mt. Murud. Supra-anal lamina $\times 6\frac{2}{3}$.

black; posterior metatarsus as long as the remaining joints biserially spined; second and third tarsal joints moderately long, spined; fourth joint unarmed; pulvilli moderately large; arolia present.

♀. Total length 24 mm.; body 23 mm.; pronotum 7×9 mm.; tegmina 16 mm.

Hab. 1 ♀ Mt. Murud.

Allied to *D. unicolor* Shelford, from Talaut I. (Gen. Ins. fas. 109, p. 14 (1910)). But whilst in this latter species clypeus and labrum are rufous, and the maxillary palps

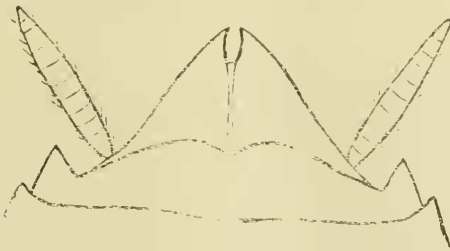


Fig. 9. *Dorylaea unicolor*, Shelf., ♀ Talaut Islands. Supra-anal lamina $\times 6\frac{2}{3}$.

fuscous, all the mouth parts of *D. atro-caput* are intensely black. Further, the supra-anal lamina of *D. unicolor* is triangular, that of *D. atro-caput* sub-quadrate.

BLATTA CONCINNA De Haan.

2 ♂, 2 ♀ Kalabit country, 3000 feet.

PERIPLANETA LATA Herbst.

1 ♀ Mt. Murud, 6500 feet; 1 ♀ Mt. Dulit.

PERIPLANETA NIVEI-PALPIS n. sp.

♀. Head free, shining black; maxillary palps with the 3 basal joints snow-white, terminal joint whitish testaceous; antennae as long as the body, fuscous. Pronotum parabolic, shining black. Tegmina much exceeding the abdomen, dark castaneous, lighter towards the tips. Wings testaceous. Abdomen below intense black, shining. Cerci stout, black, 6 joints. Legs long, slender, reddish testaceous, coxae castaneous; posterior metatarsus longer than the remaining joints, strongly spined; 2nd and 3rd joints also spined; arolia present.

♀. Total length 20 mm.; body 15 mm.; pronotum 5.2×6 mm.; tegmina 16 mm.

Hab. 1 ♀ Lio Matu.

Readily distinguished by its white palpi from all other Malayan species of *Periplaneta*.

PERIPLANETA SUCCINEA n. sp.

♂. Small, slender, elongate. Head piceous shining; mouth parts castaneous; antennae dull brown, reaching at least to the apex of the tegmina. Pronotum parabolic, posterior margin rounded; dark castaneous, shining. Tegmina much exceeding the abdomen, light castaneous to amber. Wings amber. Abdomen below castaneous, at the sides and towards

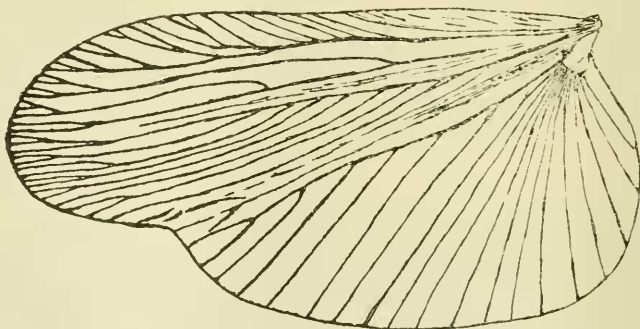


Fig. 10. *Periplaneta succinea* n. sp. ♂, Mt. Dulit. Left wing $\times 4$.

the apex almost piceous. Supra-anal lamina semi-circular, entire; subgenital lamina transverse, posterior margin straight, or only with a faint indentation. Cerci black, styles castaneous. Legs light castaneous.

♂. Total length 27 mm.; body 18 mm.; pronotum 5.5×6.5 mm.; tegmina 22 mm.

Hab. 5 ♂ Mt. Dulit; 1 ♂ Mt. Murud; 1 ♂ without locality.

Closely allied to my *P. montana*, from the Malay Peninsula. Differing from it by its somewhat larger size, its lighter colour, and by the posterior margin of the subgenital lamina showing no semi-lunar indentation, but being practically straight. The single ♂ obtained on Mt. Murud is slightly larger than those from Mt. Dulit, viz., 29 mm. in total length, and lighter in colour, especially its pronotum being more of an amber tint. It is curious that all the seven specimens obtained were male.

CATARA RUGOSICOLLIS Brunner.

3 ♂ Mt. Murud, 6500 feet; 3 ♂ Mt. Dulit; 1 ♂ Tutau River.

5 ♀ Mt. Murud, 6500 feet; 1 ♀ Tutau River.

1 ♂ Kalabit country, 3000 feet.

CATARA MINOR Krauss.

1 ♂ Mt. Murud, 6500 feet.

PROTAGONISTA FUSCA n. sp.

♂. Head not covered by the pronotum, piceous, very minutely punctured; eyes closer together than antennal sockets; antennae at least as long as the body, black, tips testaceous. Pronotum, rectangular, as long as broad, opaque, piceous, very minutely punctured, with scattered erect pubescence, a slight longitudinal ridge running along its middle, and a transverse

ridge at $\frac{1}{4}$ from the front. Tegmina narrow, somewhat exceeding the body and reaching to about the end of the long cerci;

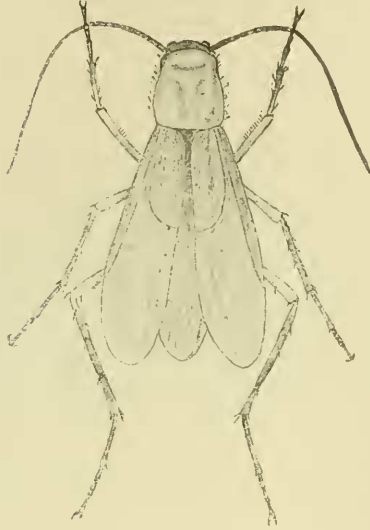


Fig. 11. *Protagonista fusca* n. sp.
×2 ♂, Mt. Dulit.

dark fuscous proximally, lighter distally; mediastinal area narrow, deflexed, black; anal vein distinct, reaching nearly half-way down the sutural margin; anal area almost black, finely punctured, remainder of tegmina very sparsely so. Wings fuscous. Abdomen and styles piceous; cerci long, with only about 10 joints testaceous, terminal joint black. Subgenital lamina transverse, twice as broad as long, the posterolateral angles rounded. Coxae of all the legs with the proximal half black, the distal half very light testaceous; femora black, with the distal $\frac{1}{4}$ light testaceous; tibiae black, their proximal end testaceous; tarsi light testaceous only at the proximal end, remainder entirely black; metatarsi and tarsal joints also black. Legs, especially the hind ones, long and slender, somewhat exceeding in the length the following joints; front femora with a comb-like series of about 11 small spines; mid femora with two spines on the anterior, and one spine on the posterior margin; hind femora with 3 spines on the anterior, and 2 spines on the posterior margin; spines of the hind tibiae biserially arranged, few in number; hind metatarsus entirely spined, first tarsal joint with about 6 spines. Arolia present, moderate.

♂. Total length 20 mm.; body 16 mm.; pronotum 5 × 5 mm.; tegmina 16 mm.

Hab. 3 ♂ Mt. Dulit.

Closely allied to *P. pertristis* mihi, from the Malay Peninsula, of which only 1 ♀ is known. (See *Journal, Malay Branch, R. As. Soc.*, Vol. I, p. 444, fig. 28 (1923)). Indeed, additional material may show that the two species are iden-

tical. Both of them come near *Eroblatta borneensis* Shelford, the differences between *Eroblatta* Shelf. and *Protagonista* Shelf. being only slight. *P. fusca* ♂ and *P. pertristis* ♀ agree in having the abdomen below entirely black, and the proximal three-fourths of the hind femora black, the distal one-fourth testaceous. In *Eroblatta borneensis* ♂ the basal segments of the abdomen are testaceous, the terminal ones black; and the greater part of the hind femora is testaceous, and only the distal one-fourth black.

The figure is drawn in the Hymenopteron-like attitude, with tegmina and wings slightly opened, which the insect generally seems to adopt.

SUBFAM. 8. CORYDINAE.

HOMOPTEROIDEA SHELFORDI n. sp.

♂ ♀. Head covered by the pronotum, globose; vertex shining black; front less intense black, shining; clypeus brown; eyes small, far apart; antennae dark fuscous, reaching to the apex of the tegmina. Pronotum sub-circular, posterior margin almost straight; corrugated; disk shining black, lateral margins hyaline. Tegmina much exceeding the body, dark fuscous, posterior portion, comprising the area between the ulnar vein and the suture, hyaline; all veins strongly marked, raised; mediastinal area very narrow; radial vein arising by 3 roots; ulnar vein giving off 7 branches towards the suture; anal area small, with 3 veins only. Wings fuscous, anterior border very dark; radial vein with 7 costals; median vein bifurcate; ulnar vein with 3 branches which at half their length are connected by transverse anastomoses and are then replaced by 5 veins which, together with the 6 costals and the 2 branches of the median vein, form a fan-like system of veins radiating towards the periphery of the wing. Anal area small, not fan-like folded, in repose placed over the fore part of the wing. Abdomen beneath fuscous, cerci very long, brown to black. Legs fuscous.

♂ ♀. Total length 9 mm.

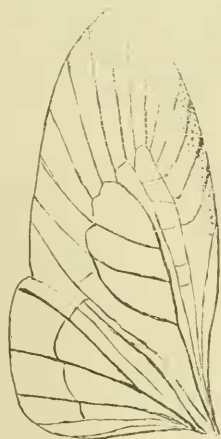


Fig. 12. *Homopteroidea shelfordi* n. sp. Mt. Murud, 6500 feet. Left wing $\times 8$.

Hab. Numerous ♂ and ♀ specimens, Mt. Murud, 6500 feet, Mt. Dulit and Tutau River. As the Oxford Museum contains an example, not named, taken by R. Shelford on the Larut Hills, Perak, 4000--4500 feet, February--March, 1905. I dedicate this species to his memory.

Closely allied to *H. nigra* Shelford, from Kuching, Sarawak, the type of which, though much mutilated, is in the Oxford Museum. But though the two species agree in the structure of their wings, *H. nigra* is readily distinguished by the apex of its tegmina being reticulate. Both tegmina and wings of *H. shelfordi* show a remarkable resemblance to those of *Latindia signata* Brunner (coll. Fieber). See his *Nouveau Systeme des Blattaires*, pl. x. fig. 49. Curiously enough, Brunner, in his remarks on *Latindia* Stal (op. cit. p. 344), says:—"Les ailes me sont inconnues," a statement difficult to reconcile with his careful illustration.

CTENONEURA* n.g.

Pronotum sub-circular, with no pubescence. Tegmina much exceeding the abdomen, overlapping each other, horny, not pubescent, venation clearly defined. Wings as long as the tegmina in both sexes, ulnar vein with parallel, curving, comb-like arranged branches, anal area not fan-like folded. Supra-anal lamina (♂ and ♀) short, transverse. Subgenital lamina in the ♂ narrow, crescent-like, with 2 styles; in the ♀ ample, globose, with shallow cleft. Cerci long. Arolia minute or absent.

This is a somewhat aberrant genus. It differs from the typical Corydinae by having the supra-anal lamina of both sexes not produced, but narrow, and through both pronotum and tegmina being smooth, not pilose. However, its unarmed posterior femora, the minute or absent arolia, and especially the venation of the wings show that its proper place is in this sub-family. The entire agreement of the venation of its wings with that of *Euthyrrhapha* Burmeister, is very striking, though its tegmina show neither the straight suture nor the pilosity of that genus.

*From the comb-like arrangement of the branches of the ulnar vein in the wings.

CTENONEURA FULVA n. sp.

♂ and ♀. Head covered by the pronotum, black, shining; antennae black, moniliform reaching nearly to the apex of the tegmina. Pronotum elliptical, disk dark testaceous to castaneous; lateral margins broad, hyaline, yellowish. Tegmina much exceeding the body, fulvo-testaceous, shining; mediastinal area yellowish, hyaline; radial vein with 12 costals, of which the first 6 arise by a common trunk, the distal 6 singly;

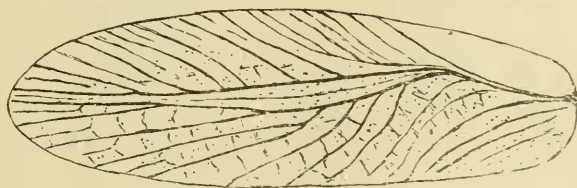


Fig. 13. *Ctenoneura fulva* n.g. & n.sp. ♀, Mt. Dulit. Left tegmen $\times 8$.

median vein undivided; ulnar vein with 9 branches; 4 discoidal sectors. Wings hyaline, central portion colourless, margins yellowish, a dark patch along the anterior margin, near the ends of the first costals; mediastinal vein bifurcate; 8 costals; median vein multi-ramose; ulnar vein with 7 curving, branches.

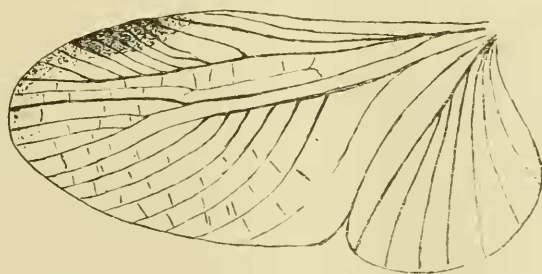


Fig. 14. *Ctenoneura fulva* n.g. & n.sp. ♀, Mt. Dulit. Left wing $\times 8$.

Abdomen below testaceous, with darker margins. Supra-anal lamina (♂ and ♀) short, transverse, with a slight longitudinal keel; sub-genital lamina (♂) narrow, crescent-like, in the ♀ globose, ample, with a shallow median incision. Cerci very long. 7 joints. Legs testaceous, arolia minute.

♂ and ♀. Total length 10.8 mm.; body 7 mm.; pronotum 2 × 3 mm.; tegmina 9.2 mm.

Hab. 3 ♂ Mt. Murud, 6500 feet; 1 ♂, 2 ♀ Mt. Dulit.

CTTRONEURA MAJOR n. sp.

♂ and ♀. Head almost covered by the pronotum; vertex shining black, frons fuscous, shining; ocelli orange; antennae as long as the body, dark fuscous. Pronotum suborbicular, disk dark brown to black, margins dark hyaline. Tegmina much exceeding the abdomen, yellowish fuscous, radial vein with 12 costals, median vein single, broken up and discontinuous; ulnar vein with 8 branches, some of which are subdivided and anastomosing; 4 discoidal sectors. Wings fuscous, anterior portion dark; radial with 8 costals; median vein 3-ramose; ulnar with 8 branches; anal area small, only about one-fourth of the total area of the wing; first axillary with 3 branches. Abdomen below dull testaceous. Cerci fuscous, with 8 joints, sub-moniliform. Legs long, slender, dull testaceous; no arolia.

♂ and ♀. Total length 12.5 mm.; body 8.3 mm.; pronotum 2 × 3 mm.; tegmina 11 mm.

Hab. 1 ♂, 1 ♀, Mt. Murud 6500 feet.

Differs from *H. fulva* chiefly by its larger size and darker colour.

DYSCOLOGAMIA CESTICULATA Saussure.

1 ♂, Tutau River.

SUBFAM. 9. OXYHALOINAE.

DIPLOPTERA BICOLOR n. sp.

♂. Head free: vertex cinnamon brown, with 3 faint black

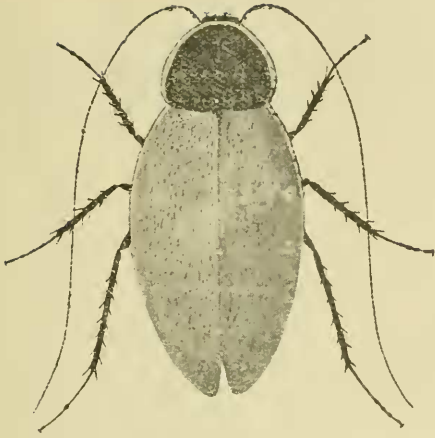


Fig. 15. *Diploptera bicolor* n. sp. $\times 4$;
♀, Pah Trap Kalabit country.

body, light cinnamon brown, minutely pitted with black. Wings with the mediastinal area opaque and coriaceous, remainder hyaline, venation as in *D. dytiscoides* Serville. Abdominal tergites and sternites black, both with narrow lateral reddish-brown borders. Supra-anal lamina narrow, transverse black, with brownish border. Subgenital lamina black asymmetrical, its right half receding; only the right style present. Cerci testaceous. Legs black, posterior metatarsus cinnamon; spines cinnamon.

longitudinal lines; face black; antennae body, their basal one-twice as long as the third black, remainder fuscous. Pronotum oval, hinder margin nearly straight; black with a reddish testaceous border all round, widest at the sides, narrowest in front; very finely pitted. Tegmina slightly exceeding the

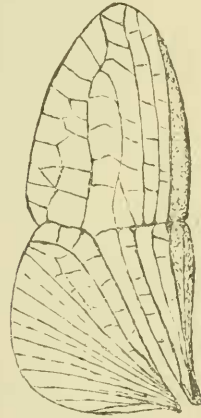


Fig. 16. *Diploptera bicolor* n. sp. ♂, Pah Trap Kalabit country. Left wing $\times 4$.

♂. Total length 11 mm.; tegmina 7.5 mm.; wings 13.2 mm.

Hab. 1 ♂ Pah Trap, Kalabit country.

The discovery of a new species of *Diploptera* is very interesting as so far only two species of this genus had been known, viz., *D. dytiscoides* Serville, first described from Australia as long ago as 1839, and since recorded also from Ceylon, Burma, the Malay Peninsula, Singapore, Sarawak, the Philippines, Buru, Honolulu and Tahiti, and *D. minor* Brunner, which seems peculiar to the Philippines.

DIPLOPTERA MACULATA n. sp.

♀. Head free, black, vertex and mouth parts dull orange; antennae (mutilated) with their first 15 joints black, remainder brown. Pronotum roughly oval, hinder border nearly straight, orange-testaceous; a triangular black macula behind the centre, a slanting black vitta on either side of it, the two vittae converging forwards, but not meeting; very finely punctured. Tegmina just exceeding the abdomen, uniform dull orange-testaceous, closely and deeply punctured. Wings clear hyaline, mediastinal area opaque, venation similar to that of *D. dytiscoides* Serv. 1st abdominal tergite black; 2nd laterally with narrow orange margins; 3rd to 7th with broad orange margins, each containing a round black spot; 8th tergite and supra-anal lamina entirely orange;



Fig. 17. *Diploptera maculata* n. sp. ×3; ♀, Pah Trap Kalabit country.

orange margins; 3rd to 7th with broad orange margins, each containing a round black spot; 8th tergite and supra-anal lamina entirely orange;

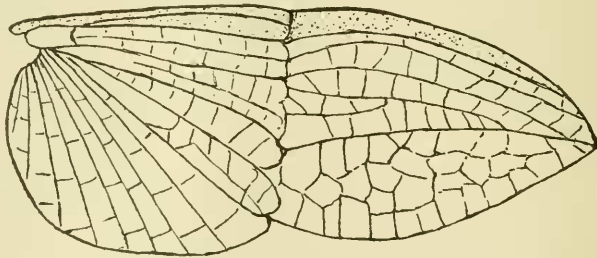


Fig. 18. *Diploptera maculata* n. sp. ♀, Pah Trap Kalabit country. Right wing ×4.

abdominal sternites black with very narrow lateral orange borders. Cerci orange. Legs black.

♀. Total length 15 mm.; body 14 mm.; pronotum 3×4 mm.; tegmina 12 mm.; wings 20 mm.

Hab. 1 ♀ Pah Trap, Kalabit country.

It is very likely that the discovery of additional material will prove *D. maculata* merely to be the ♀ of *D. bicolor*. The collection unfortunately contained only one specimen of each.

SUBFAM. 10. PERISPHAERINAE.

PARANAUPHOETA LYRATA Burmeister.

1 ♀ Mt. Murud, 6500 feet.

PSEUDOGLOMERIS FLAVICORNIS Burmeister.

2 ♂ Mt. Murud, 6500 feet.

SUBFAM. 11. PANESTHINAE.

SALGANEA MORIO Burmeister.

1 ♀ (adult, fully winged) Mt. Dulit; 1 ♀ (larva, tegmina squamiform) Mt. Dulit.

The two specimens obtained show the extraordinary variation in size to which this species is subject, the larva being considerably larger than the adult. The latter measures :—

Total length 42 mm.; body 32 mm.; pronotum 7.5×11 mm.; tegmina (much exceeding the abdomen) 34 mm.

The corresponding measurements for the larva are :—

Total length (=body) 49 mm.; pronotum 12×18 mm.; tegmina (squamiform, reaching only to the posterior margin of the metanotum) 8.5 mm.

PANESTHIA JAVANICA Serville.

There are 35 specimens, differing greatly in size in the development of tegmina and wings, and in colouring, which I am obliged to refer for the present all to this species. They are :—

6 ♂ Mt. Dulit, 2 ♂ Tutau River, all of normal size and habitus, and fully winged (i.e., both tegmina and wings fully developed), the largest specimen, from Mt. Dulit, measuring 55 mm. in total length.

1 ♂ Mt. Dulit, fully winged, but exceptionally small and dark, total length 36 mm.

2 ♂ Mt. Murud, 6500 feet, short winged, the tegmina reaching to the end of the 5th abdominal segment only; total length 51 mm.

1 ♂ (label not decipherable) small and dark.

1 ♂ larva, normal, apterous, Kalabit country, 3000 feet.

1 ♂ larva, apterous, with faint orange spots on the metanotum only, Mt. Dulit.

3 ♂ larvae, apterous, with two orange spots on the metanotum only, which are practically confluent in the middle, Mt. Murud 6500 feet.

10 ♀ Mt. Dulit; 4 ♀ Lio Matu; 1 ♀ Mt. Murud 6500 feet, and adult, fully winged and of typical appearance.

2 ♀ Mt. Dulit, adult and fully winged, but small and dark.

1 ♀ larva, Mt. Murud 6500 feet, apterous, with orange maculae on the metanotum only.

PANESTHIA SINUATA Saussure.

6 ♂ Mt. Murud, 6500 feet; 1 ♀ Pah Trap.

Of the male specimens two have the tegmina fully developed, though not quite reaching to the apex of the abdomen; in two others the tegmina cover the first three abdominal segments only, and two specimens (larvae?) are apterous. In the female specimen the tegmina are somewhat mutilated, but probably reached to about the 5th abdominal segment. A typical ♂ measures:—

♂. Total 27 mm.; pronotum 5.5×8.5 mm.; tegmina (slightly worn at the apex) 18 mm.

This would appear to be the first record from Borneo. The type (♂) of this species came from Singapore, but to my knowledge no other example has been taken there or elsewhere.